DRAUGHT BEER DISPENSING SYSTEM

CROSS REFERENCE

This application is a continuation application of U.S. application Ser. No. 07/395,899 filed on Aug. 18, 1989 now abandoned, which is in turn a divisional application of U.S. Ser. No. 234,894 filed on Aug. 22, 1988 and now granted and U.S. Pat. No. 4,864,396. Thus this application discloses and claims only the subject matter described in prior applications. This application is now also co-pending with U.S. application Ser. No. 395,805 and Ser. No. 396,568 which are divisions of U.S. Pat. No. 4,864,396 and filed respectively on Aug. 18, 1989 and Aug. 21, 1989.

BACKGROUND OF THE INVENTION

The present invention relates to a draught beer dispensing system, and more particularly to a draught beer dispensing system which, can, in dispensing draught beer under pressure, automatically control pressure of carbon dioxide gas to be supplied into a draught beer receiving receptacle to an optimum pressure depending upon temperature of the draught beer to thereby automatically dispense a predetermined quantity of draught beer.

As a system for dispensing barreled draught beer, a draught beer dispensing system has been heretofore known. In such a draught beer dispensing system, pressurized carbon dioxide gases are supplied from a carbon dioxide cylinder into a keg filled with draught beer, and the draught beer within the keg is cooled in a cooling tank by the pressure of the thus supplied carbon dioxide gases and then dispensed.

There is a constant equilibrium relationship between temperature and pressure of draught beer filled in the keg. Taking, as an example, the case of 0.50% (5.0 g/) which is a standard content of carbon dioxide gas of the barreled draught beer, beer in 0.50% of carbon dioxide content assumes a stable state under the pressure of 2 kg/cm^2 at 20° C. This stable state herein termed means the just balanced state in which the carbon dioxide gas is no longer dissolved into beer nor liberated from the beer. Pressure at that time is generally called the equilibrium pressure. That is, in order that the carbon dioxide gases within the barreled draught beer may be always dispensed in a stable state, the equilibrium pressure according to the temperature of the beer has to be applied, which is a proper pressure. Accordingly, flat beer or foamy beer brings forth unless pressure of carbon dioxide gas supplied into a keg is set to an equilibrium pressure corresponding to temperature of draught beer when the draught beer is pressurized and dispensed from the keg, and therefore, pressure of the carbon dioxide gas supplied into the keg has to be controlled on the basis of the beer temperature. That is, when the pressure of carbon dioxide gases supplied into the keg is low, the carbon dioxide gases within the draught beer are liberated to bring forth flat beer with less content of carbon dioxide gas, whereas when the pressure of carbon dioxide gases supplied into the keg is high, the carbon dioxide gases are dissolved into the draught beer to bring forth foamy beer with much content of carbon dioxide gas. For this reason, a method for automatically controlling gas pressure within a draught beer receiving receptacle as disclosed in Japanese Laid-Open Patent Publication No. 64,790/1987 has been proposed. According to this controlling method, there comprises a

pressure regulating member composed of a plurality of pressure reducing valves provided in parallel with each other to regulate pressure of carbon dioxide gases supplied from a carbon dioxide cylinder into a draught beer receiving receptacle, a temperature detection member composed of a temperature sensor for detecting a temperature of draught beer within the receiving receptacle, and a control member, whereby when the detection member detects that the temperature of draught beer within the draught beer receiving receptacle is higher than a predetermined temperature, the pressure of the supplied carbon dioxide gas caused by the pressure regulating member is increased by the control of the control member which receives a detection signal, whereas when the detection member detects that the temperature of draught beer within the draught beer receiving receptacle is lower than a predetermined temperature, the pressure of the supplied carbon dioxide gas caused by the pressure regulating member is decreased.

Next, one example of a conventional draught beer dispensing system will be described with reference to FIG. **29**.

In FIG. **29**, the reference numeral **1** designates a dispenser, which has a cooling coil **3** within a cooling tank **2**, and a heat exchange is effected within the cooling coil **3** so as to cool beer within the cooling coil **3**. On the end of the outlet side of the cooling coil **3** is provided a beer dispensing valve **110** called a tap which is opened and closed manually.

A draught beer keg **5** constituting a draught beer receiving receptacle is installed adjacent to the dispenser **1**, and a dispenser head **6** is detachably mounted on the lip portion of the draught beer keg **5**. The dispenser head **6** has a siphon pipe **7** suspended within the keg and a carbon dioxide gas supplying pipe **8** in communication with an upper part within the keg, the siphon pipe **7** being in communication with an inlet side of the cooling coil **3** by means of a beer hose **9**, the carbon dioxide gas supplying pipe **8** being in communication with a carbon dioxide gas cylinder **13** through a manual pressure reducing valve **12** by means of a carbon dioxide gas hose **10**.

In the aforementioned draught beer dispensing system, in the case where the draught beer within the draught beer keg **5** is dispensed, the carbon dioxide gases within the carbon dioxide gas cylinder **13** are supplied into the draught beer keg **5** through the pressure reducing valve **12**, the draught beer within the keg **5** is supplied to the cooling coil **3** of the dispenser **1** through the siphon pipe **7** by pressure of the thus supplied carbon dioxide gases, and the beer dispensing valve **10** is opened to thereby dispense draught beer.

Next, a conventional beer dispensing valve will be described with reference to FIGS. **31** and **32**.

A beer dispensing valve **110** shown in FIG. **31** is a manual dispensing valve having a foaming function. The beer dispensing valve **110** comprises a valve body **111**, a valve stem **112** slidably provided within the valve body **111** and a lever **113** for sliding the valve stem **112**, the valve stem **112** having a valve **114** provided at the front end thereof, the valve **114** being engaged with and disengaged from a valve seat **111***a* of the valve body **111** to perform a valve action.

The valve **114** is composed of a packing retaining member **115** slidably fitted in the front end of the valve stem **112** and a packing **116** held by the packing retain-